

ABSTRACT OF THE DISCLOSURE

The purpose of the invention is to provide a heavy oil reforming method which reforms a heavy oil to give a fuel suitable for a gas turbine, eliminates sulfur and vanadium, i.e., harmful components, from a heavy oil, and enables almost all the hydrocarbons in the heavy oil to be used in gas turbine combustion; an apparatus therefor; and a gas turbine power generation system using the reformed heavy oil as fuel.

This method comprises reacting a heavy oil with supercritical water and then with a scavenger for sulfur and vanadium to eliminate sulfur and vanadium from the heavy oil. The apparatus for reforming a heavy oil is equipped with a reactor for reacting a heavy oil with supercritical water, a scavenging apparatus filled with a scavenger for scavenging sulfur and vanadium in the heavy oil, and a connecting pipe for connecting the reactor and the scavenging apparatus. The gas turbine power generation system has a burner for burning a heavy oil reformed with the reforming apparatus and a gas turbine driven by a combustion gas generated by the burner.